



CUMMINS MARINE
 Charleston, SC 29405
 Marine Performance Curves
gce.cummins.com

Basic Engine Model:
QSB7-DM

Curve Number:
DM-93774

Engine Configuration:
D313014MX03

CPL Code:
3460

Date:
19-Sep-17

Displacement: **6.7 liter [408 in³]**
 Bore: **107 mm [4.21 in]**
 Stroke: **124 mm [4.88 in]**
 Fuel System: **High Pressure Common Rail**
 Cylinders: **6**

Advertised Power: **164[220]@1500** kW [hp] @ rpm
 Aspiration: **Turbocharged / Aftercooled**
 Exhaust Type: **Water Jacketed**

CERTIFIED: This marine diesel engine complies with or is certified to the:

EPA Tier 3 - Model year requirements of the EPA marine regulation (40CFR94)

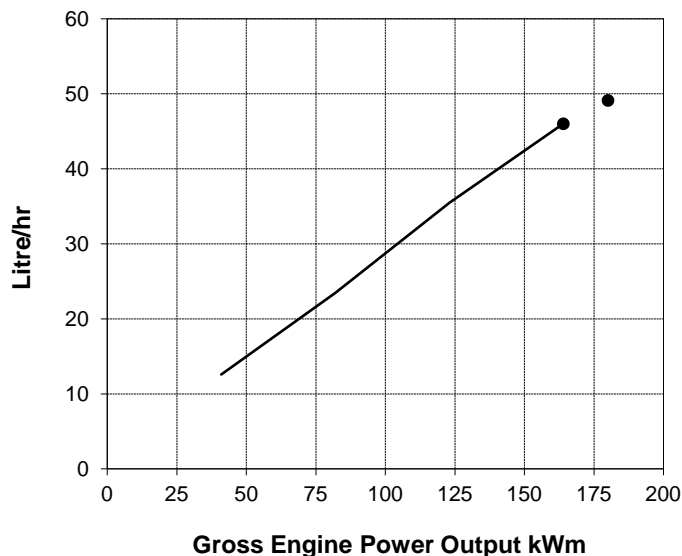
EU Stage IIIa - EC Nonroad Mobile Machinery Directive (2004/26/EC)

IMO Tier II (Two) NOx requirements of International Maritime Organization (IMO), MARPOL 73/78 Annex VI, Regulation 13

| Engine Speed | Overload Capacity | | Prime Power | | Continuous Power | |
|--------------|-------------------|-----|-------------|-----|------------------|-----|
| | kWm | BHP | kWm | BHP | kWm | BHP |
| RPM | | | | | | |
| 1500 | 180 | 242 | 164 | 220 | 131 | 176 |

Engine Performance Data @ 1500 rpm

| OUTPUT POWER | | | FUEL CONSUMPTION | | | |
|------------------------------|-----|-----|------------------|-----------|-------------|----------------|
| % | kWm | BHP | kg/kWh | Lb/ BHP/h | Liter/ hour | U.S. Gal/ hour |
| 10% OVERLOAD CAPACITY | | | | | | |
| 110% | 180 | 242 | 0.226 | 0.372 | 49.1 | 13.0 |
| PRIME POWER | | | | | | |
| 100% | 164 | 220 | 0.233 | 0.384 | 46.0 | 12.2 |
| 75% | 123 | 165 | 0.237 | 0.390 | 35.5 | 9.4 |
| 50% | 82 | 110 | 0.241 | 0.397 | 23.4 | 6.2 |
| 25% | 41 | 55 | 0.247 | 0.406 | 12.6 | 3.3 |
| 10% | 16 | 22 | 0.363 | 0.597 | 6.8 | 1.8 |
| CONTINUOUS POWER | | | | | | |
| 80% | 131 | 176 | 0.240 | 0.394 | 37.8 | 10.0 |



Rating Conditions: Ratings are in accordance with ISO 15550 and ISO 8528-5 reference conditions; air pressure at 100 kPa (29.61 in Hg), air temperature 25°C (77°F), and 30% relative humidity.
 Power output curves are based on the engine operating with fuel system, water pump, and lubricating oil pump; not included are battery charging alternator, fan, optional equipment, and driven components.
 Values from engine control modules and displayed on instrument panels are not absolute. Tolerance varies, but is generally less than +/-5% when operating within 30% of rated power.
 Unless otherwise specified, tolerance on all values is +/-5%.

Prime Power Rating is applicable for supplying continual electrical power at varied load. The following are the Prime Rating parameters:
 * Engines with a Prime Power rating are available for an unlimited number of hours per year in variable load applications. Variable load is not to exceed an 80 percent average of the rated power.
 * A 10 percent overload capability is available for a period of one hour within a 12 hour period of operation.
 * Total operating time at the 10 percent overload power shall not exceed 25 hours per year. This power rating follows ISO 8528 guidelines.

TECHNICAL DATA DEPT.

CHIEF ENGINEER

Auxiliary Marine Engine Performance Data

Curve No. **DM-93774**
DS : **D31-MX-1**
CPL : **3460**
DATE: **19-Sep-17**

General Engine Data

| | | | | |
|---------------------------------------|-------------|----------|------|-------|
| Engine Model | QSB7-DM | | | |
| Rated Engine Power | Prime Power | Overload | | |
| Governed Engine Speed | 164 | [220] | 180 | [242] |
| Rated HP Production Tolerance | | 5 | | |
| Rated Engine Torque | 1044 | [770] | 1149 | [847] |
| Default Idle Speed Setting | | 700 | | |
| Low Idle Speed Range Minimum | | 700 | | |

Maximum Continuous Torque Capacity from Front of Crank

| | | | | |
|--|------|-------------|------|-------|
| Maximum Torque Capacity from Front of Crank ² | 900 | [664] | | |
| Brake Mean Effective Pressure | 1962 | [285] | 2158 | [313] |
| Compression Ratio | | 17.3:1 | | |
| Piston Speed | 6 | [1220] | | |
| Firing Order | | 1-5-3-6-2-4 | | |
| Friction Power | 19 | [25] | | |
| Steady State Stability Band at Constant Load | | 0.25 | | |
| Weight Dry - Engine With Heat Exchanger | 708 | [1561] | | |

Noise and Vibration

| | | | |
|----------------------------------|---------------|----------|------|
| Average Noise Level - Top | (Idle) | dBA @ 1m | N.A. |
| | (Rated) | dBA @ 1m | N.A. |
| Average Noise Level - Right Side | (Idle) | dBA @ 1m | N.A. |
| | (Rated) | dBA @ 1m | N.A. |
| Average Noise Level - Left Side | (Idle) | dBA @ 1m | N.A. |
| | (Rated) | dBA @ 1m | N.A. |

Fuel System¹

| | | | | |
|---|-------|--------|-------|--------|
| Approximate Fuel Flow to Pump | 134.0 | [35.4] | 134.0 | [35.4] |
| Maximum Allowable Fuel Supply to Pump Temperature | 60 | [140] | 60 | [140] |
| Approximate Fuel Flow Return to Tank | 88.0 | [23.2] | 84.9 | [22.4] |
| Approximate Fuel Return to Tank Temperature | 57 | [134] | 57 | [135] |
| Maximum Heat Rejection to Drain Fuel | 1 | [42] | 1 | [43] |
| Average Fuel Consumption- Emissions ISO 8178 D2 Test Cycle..... | 22.7 | [6.0] | | |

Air System¹

| | | | | |
|---------------------------------|-----|-------|-----|-------|
| Intake Manifold Pressure | 173 | [51] | 180 | [53] |
| Intake Air Flow | 176 | [373] | 179 | [380] |
| Heat Rejection to Ambient | 8 | [453] | 8 | [466] |

Exhaust System¹

| | | | | |
|---|-----|--------|-----|--------|
| Exhaust Gas Flow | 433 | [917] | 446 | [945] |
| Exhaust Gas Temperature (Turbine Out) | 489 | [911] | 498 | [928] |
| Exhaust Gas Temperature (Manifold) | 680 | [1255] | 692 | [1277] |
| Heat Rejection to Exhaust | 112 | [6398] | 118 | [6691] |

TBD= To Be Determined

N/A = Not Applicable

N.A. = Not Available

- ¹ Unless otherwise specified, all data is at rated power conditions and can vary ± 5%.
- ² No rear loads can be applied when the FPTO is fully loaded. Max PTO torque is contingent on torsional analysis results for the specific drive system. Consult Installation Direction Booklet for Limitations.
- ³ Heat rejection to coolant values are based on 50% water/50% ethylene glycol mix and do NOT include fouling factors. If sourcing your own cooler, a service fouling factor should be applied according to the cooler manufacturer's recommendation.
- ⁴ Consult option notes for flow specifications of optional Cummins seawater pumps, if applicable.

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COLUMBUS, INDIANA

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Auxiliary Marine Engine Performance Data

Curve No. **DM-93774**
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Emissions (in accordance with ISO 8178 Cycle D2)

| | | | | |
|--|--------------------|-------|---------|--|
| NOx (Oxides of Nitrogen) | g/kw-hr [g/bhp-hr] | 3.631 | [2.707] | |
| HC (Hydrocarbons) | g/kw-hr [g/bhp-hr] | 0.244 | [0.182] | |
| CO (Carbon Monoxide) | g/kw-hr [g/bhp-hr] | 0.910 | [0.679] | |
| PM (Particulate Matter) | g/kw-hr [g/bhp-hr] | 0.095 | [0.070] | |
| CO ₂ (Carbon dioxide) | g/kw-hr [g/bhp-hr] | 789 | [588] | |

Emissions (in accordance with ISO 8178 Cycle E2)

| | | | | |
|--|--------------------|-------|---------|--|
| NOx (Oxides of Nitrogen) | g/kw-hr [g/bhp-hr] | 3.816 | [2.846] | |
| HC (Hydrocarbons) | g/kw-hr [g/bhp-hr] | 0.109 | [0.081] | |
| CO (Carbon Monoxide) | g/kw-hr [g/bhp-hr] | 0.919 | [0.686] | |
| PM (Particulate Matter) | g/kw-hr [g/bhp-hr] | 0.096 | [0.072] | |
| CO ₂ (Carbon dioxide) | g/kw-hr [g/bhp-hr] | 748 | [558] | |

Cooling System¹

| | | | | |
|-------------------------------------|------------------------|-----|------|--|
| Sea Water Pump Specifications | MAB 0.08.17-07/16/2001 | | | |
| Minimum Pressure Cap Rating |kPa [psi] | 103 | [15] | |

Engines with Keel Cooling

| | | | | |
|--|--------------------|-----|--------|-------------|
| Coolant Flow to Cooler (with blocked open thermostat)..... | l/min [gal/min] | 132 | [35] | |
| Standard Thermostat Operating Range | Start to open..... | 71 | [160] | |
| | Full open..... | 83 | [181] | |
| Heat Rejection to Engine Coolant ³ | kW [Btu/min] | 171 | [9751] | 177 [10068] |
| Maximum Engine Coolant Inlet Temperature from Cooler..... | °C [°F] | 54 | [130] | |

Engines with Radiator Cooling

| | | | | |
|--|--------------------|-----|--------|-------------|
| Coolant Flow to Radiator (with blocked open thermostat)..... | l/min [gal/min] | 132 | [35] | |
| Standard Thermostat Operating Range | Start to open..... | 71 | [160] | |
| | Full open..... | 83 | [181] | |
| Heat Rejection to Engine Coolant ³ | kW [Btu/min] | 171 | [9751] | 177 [10068] |
| Maximum Coolant Inlet Temperature from Radiator | | | | |
| For Radiator @ 35° C [95° F] Ambient Air..... | °C [°F] | 54 | [130] | |
| For Radiator @ 50° C [122° F] Ambient Air..... | °C [°F] | 68 | [155] | |

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